

## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.

# FOREST FARMING



U.S. DEPARTMENT OF  
AGRICULTURE

FARMERS' BULLETIN No. 1794

## ESSENTIALS OF TIMBER FARMING

**I**T IS IMPORTANT to keep timber stands growing thriftily. The first essential purpose for this is to exclude fire and, in the case of the hardwoods, also livestock. Fire destroys the soft, spongy leaf litter and enrichening humus which are both very necessary for maintaining the tree growth in a thrifty condition.

It is also important to cut the timber crop lightly so as to avoid forming large openings where the sun and wind can dry out the soil; but more essentially so as to keep the woodland well-stocked with trees. Only so can the owner get the largest production and best quality of timber per unit of area for his own use or for sale.

Selective cutting, or frequent light cutting, is unquestionably the best method for farmers. A heavy or clear cutting, even with a few trees left for seed, means waiting many years before the land yields another timber crop and the owner receives an income from his land.

The remaining step in good timber farming is the planting of small forest tree seedlings to fill in large openings in the woods, stop soil erosion, or utilize worn-out or unproductive land on the farm.

### WHAT FARMERS SAY

#### PENNSYLVANIA—

"Farm your woods as you do a crop of corn. Take out the weed trees and the unhealthy and crippled ones and give the best trees a chance to develop. Cut the good trees only when they are ripe."

#### OHIO—

"Money from the sale of timber has helped to pay for the farm, take care of taxes, and assist in giving the children a good education, and in addition has furnished lumber, posts, and fuel for the farm."

#### NORTH CAROLINA—

"My woods are my bank. I keep going to it and getting money, and each time the money keeps right on coming back."

#### ARKANSAS—

A farmer in the white oak section of the Ozark Mountains said that timber was the chief source of their living. "Cross ties are legal tender around here. We bring in our ties and take home flour, sugar, coffee, calico, and overalls."

#### MINNESOTA—

"Timber farming is different now from the old days when woods work was just chopping down trees and cutting them up just as you came to them, one after the other. Now you take care of them as a paying farm crop."

# FOREST FARMING

Prepared by Division of Private Forestry, Forest Service

## CONTENTS

	Page		Page
Timber as a farm crop.....	1	Trees reclaim eroded acres.....	9
Forest farming, a part-time occupation.....	2	Wood insures winter job.....	9
Area and benefits received from farm woodlands.....	3	Returns in growing timber in New Hampshire.....	11
Pine poles from an old potato patch.....	8	Windbreaks and shelterbelts.....	16
		Farm products in terms of money.....	17

## TIMBER AS A FARM CROP

**W**HEN THE MODERN FARMER talks of crops, he includes his timber crop. His farm woods yield him cash income. Trees grow on the less fertile soils not needed for other agricultural uses. While growing, they require no fertilizer or cultivation. The sale of their products tides the farmer over lean years. He looks to his timber crop for profit.

In the United States in 1935, according to the Federal Bureau of the Census, there were 6,812,350 farms. The average area of woodland on all farms was 27 acres—not quite 18 percent of the average farm acreage. Progressive farmers in many States have proved that if that 18 percent of the farm is handled as a timber crop it will pay cash dividends.

Forest farming is recognized as an important part of agriculture that has been too long neglected. Every farmer knows that wood, in its various forms, is essential for the successful operation of a farm property. Timber is a poor-land crop. Hills that are rocky and steep, sites that are too wet or too dry, soils that are infertile or worn out will grow trees.

Farm forests in many sections of the country supply most, if not all, of the timber needed for farm buildings, fences, fuel, repairs of all kinds, and many other uses. Surpluses are often sold in the form of standing timber, sawlogs, posts, poles, cross ties, pulpwood, fuel wood, and blocks or billets for the manufacture of handles, spools, boxes, barrels, and excelsior.

Even if the farmer sells no timber his woodland pays for itself. Every farm needs wood products of various kinds. If they are not grown at home they have to be bought in the open market. Consequently, the use of home-grown wood products saves money often needed for other farm and family purchases. Because they are usually conveniently at hand, they also save the busy farmer's time.

Farm woodland should be fully stocked with high-quality trees if it is to be most profitable and useful to the farmer. Land not needed for other agricultural purposes should be planted to trees. No farmer can afford to pay taxes on idle land.

Timber is a farm crop. It can be made a paying farm crop.



**FOREST FARMING, A PART-TIME OCCUPATION**

The farmer's work is never done. But forestry in the farm woods is a part-time occupation which may be carried on in the winter months, when other work is less pressing.

Most agricultural crops require preparation of the soil, fertilizing, and constant cultivation. Timber requires no special attention beyond protection from fire and livestock, and careful use of the ax and saw.

Even with the utmost effort many farm families cannot adequately support themselves from their field and orchard crops and livestock. Harvesting wood crops during the slack winter months provides welcome cash income and, in addition, keeps teams and equipment in use that might otherwise be idle.

Nearly every kind of forest product can be satisfactorily handled in the winter. Logs cut at that time are not subject to rapid drying and deep checking at the ends. Timber felled in cold weather is not damaged by insects, which often cause losses in hot months. Damage from wood-rotting fungi and staining is prevented when cutting is done in the winter.

Progressive farmers are accustomed to applying modern scientific principles of agriculture to their field crops as a matter of course. The principles of good forestry management are easily understood by the average woodland owner.

Farm woods respond readily to the application of simple forestry methods. Most important of these are protection from fire and livestock, and careful use of the ax and saw.

Fire, fortunately, is not ordinarily a serious problem in the farm woods, but injury by livestock frequently is. Animals turned into the farm woods for unrestricted grazing may do considerable damage. They tramp down, root up, and eat the young seedlings needed to produce the forest of the future. Their sharp hoofs may bruise exposed roots, permitting fungous diseases which cause death or decay to enter the trees.

The reason for the poor quality of timber on many woodland properties can be traced to the continuous removal of the best trees. Over a period of years, if only the highest grade trees are cut the remaining stand will consist largely of inferior kinds.

With careful harvesting of wood products, the forest farmer may practice sustained-yield forestry. He may cut his timber and have it too; growth will balance cut. In the long run he can increase his profits as well as his production, and still have his woods in better shape than when he did not practice forestry.

A cord of wood contains 128 cubic feet of stacked wood, or approximately 90 cubic feet of solid wood. The smaller the sticks, the more pieces it takes to make a cord, and the less solid wood it contains. For example, when cordwood is cut from 5-inch trees, it takes 42 trees of average longleaf pine to make a cord, and the solid content amounts to 83 cubic feet. It takes only six trees measuring 10 inches at breast height to furnish enough sticks to make a cord, and a cord of such wood will contain 89 cubic feet of solid content.

## WOODLANDS IMPROVE THE HOME

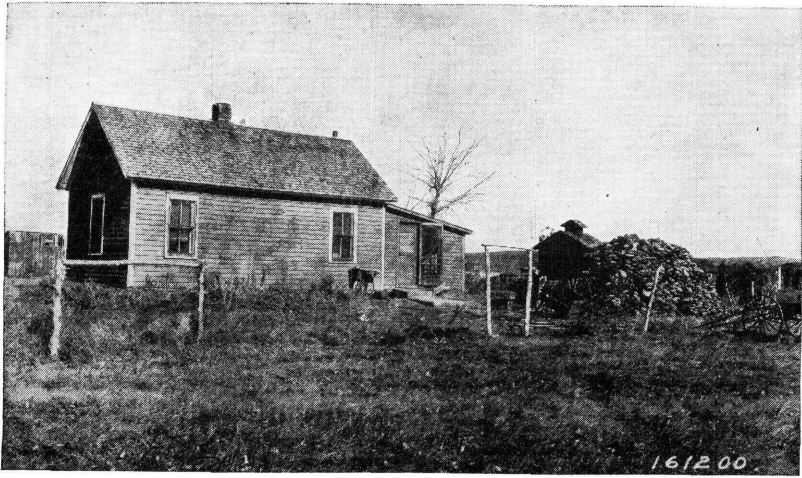


FIGURE 1.—This home in Cherry County, Nebr., has one lone tree and a bare horizon for miles and miles. Note the pile of cow chips in the back yard and the pathetic attempt to build a fence. This farmer needs farm woodlands.

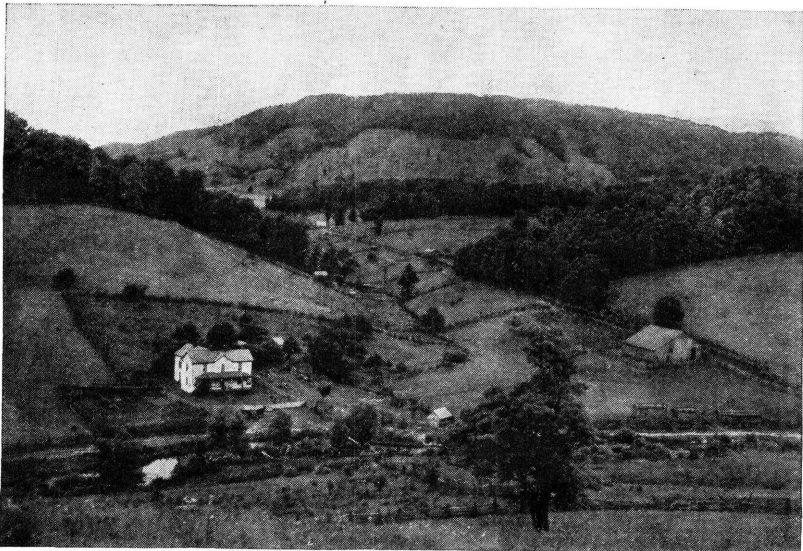


FIGURE 2.—This home is surrounded by woodlands and radiates an atmosphere of comfort and contentment. Besides their protective value and scenic beauty, these woodlands provide cash income for their owner.

## AREA AND BENEFITS RECEIVED FROM FARM WOODLANDS

The area devoted to farm woodlands and the returns therefrom in two States, New Hampshire and North Carolina, are shown graphically in figures 3 to 6. Similar charts are available for 31 other States.

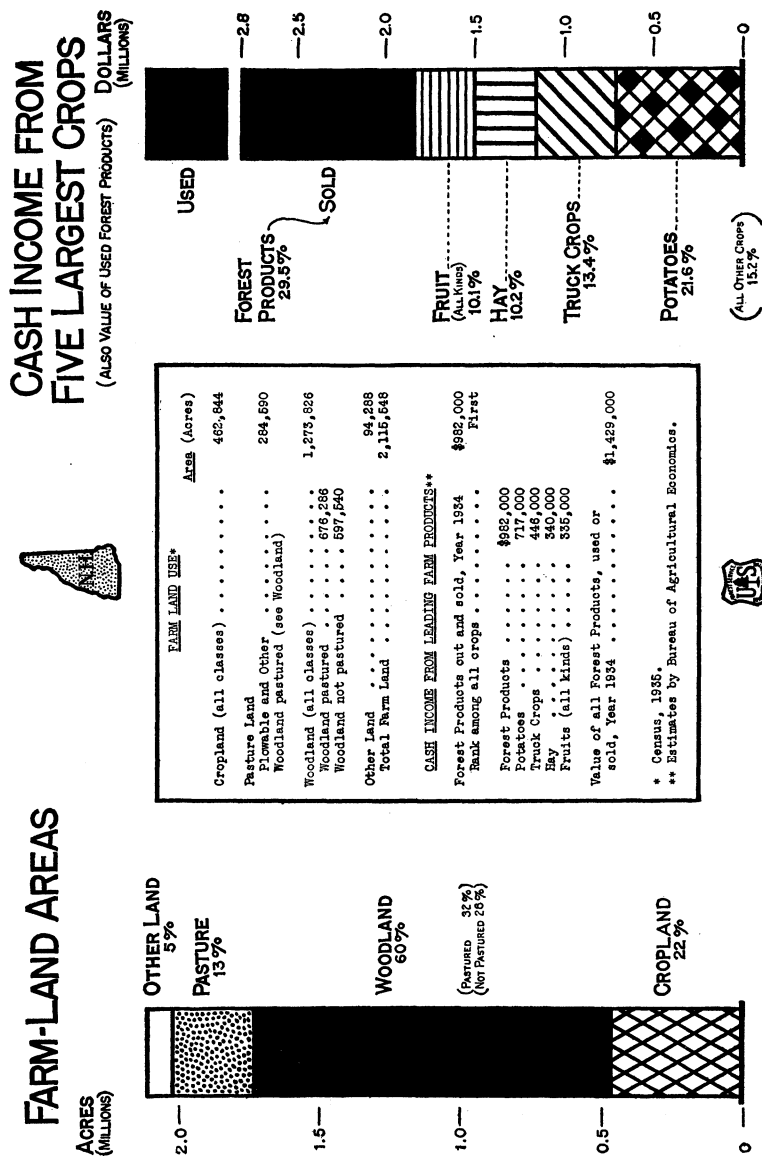


FIGURE 3.—Area and returns from the farm woodlands of New Hampshire.

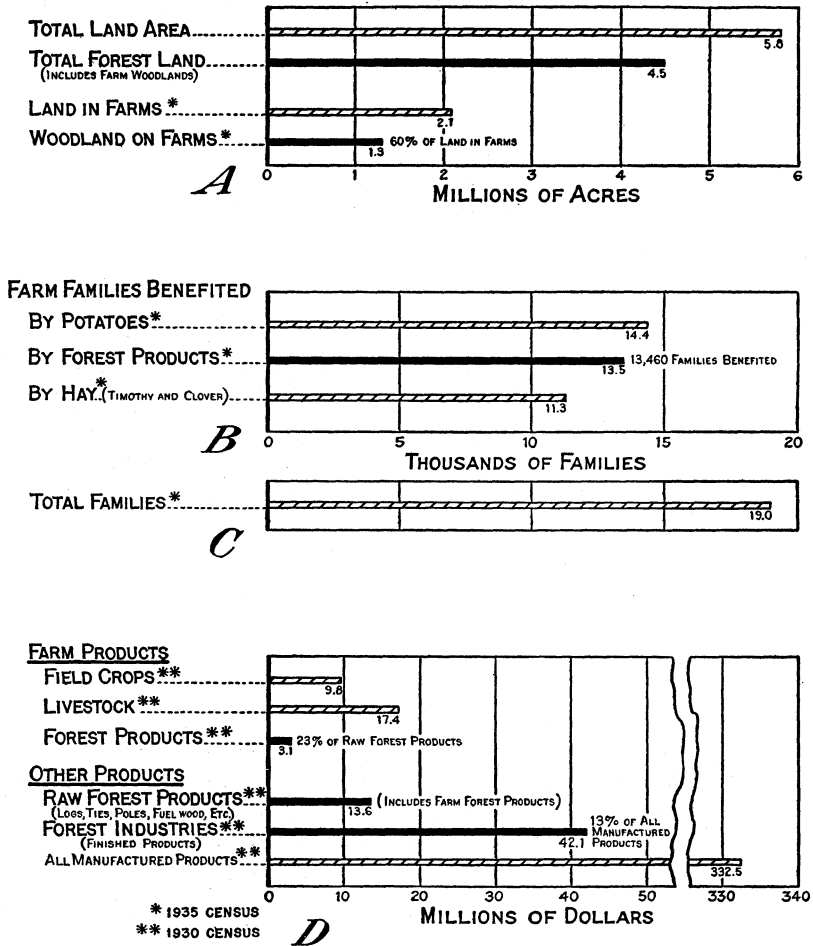


FIGURE 4.—Benefits received from the farm woodlands of New Hampshire: A, Land areas in the State; B, sources of benefits to families; C, farm families in the State; D, comparison of principal sources of income.

Number of sticks of round unpeeled wood needed to make a cord.

Inches diameter	Sticks per cord
4	228
5	152
6	109
7	82
8	64
9	51
10	42
11	35
12	30

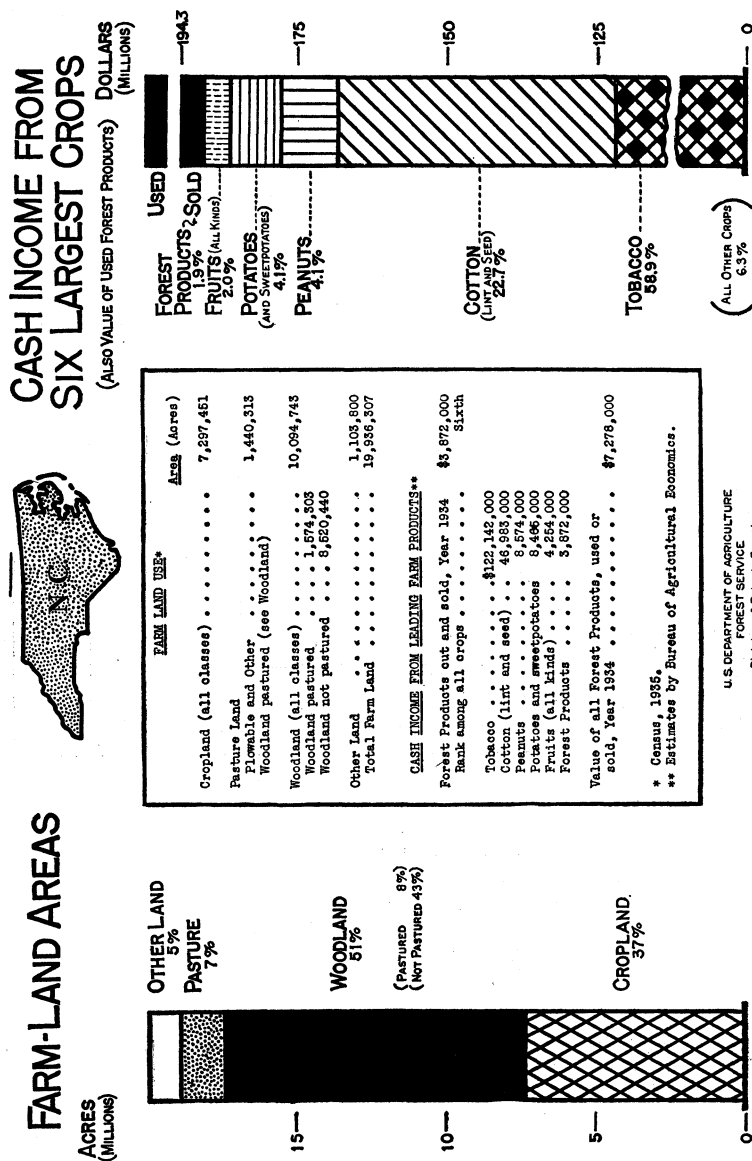


Figure 5.—Area and returns from the farm woodlands of North Carolina.

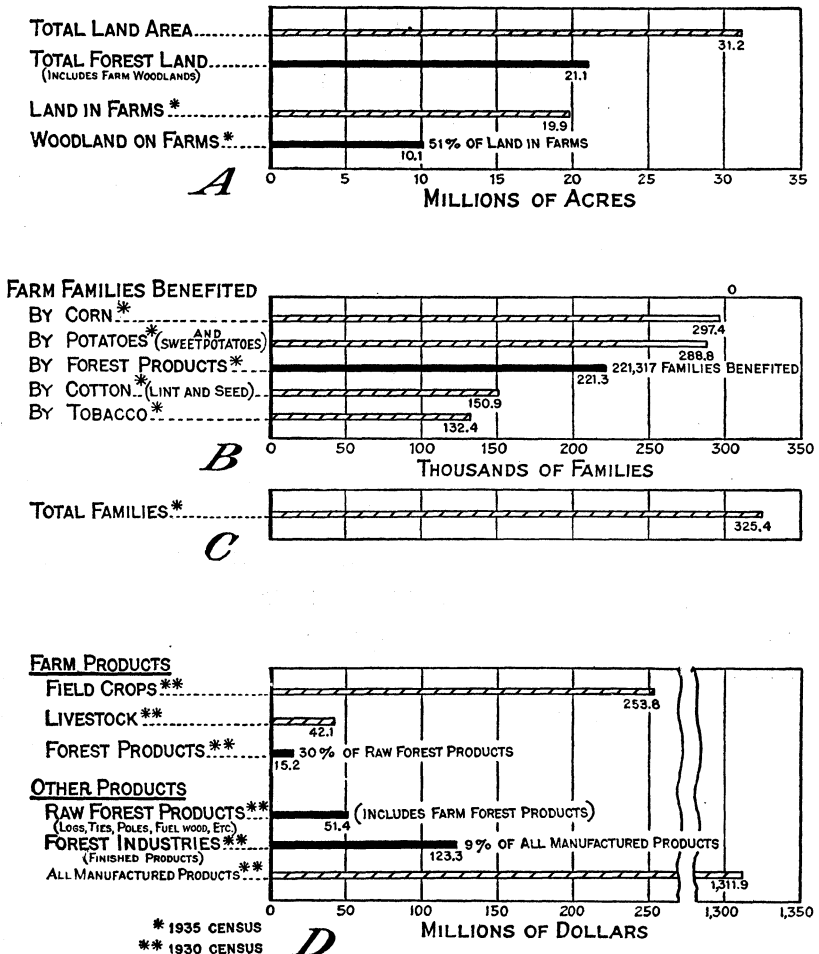


FIGURE 6.—Benefits received from the farm woodlands of North Carolina: A, Land area in the State; B, sources of benefits to families; C, farm families in the State; D, comparison of principal sources of income.

The cord is the commonly accepted unit of measure for small timber cut into short lengths for use as pulpwood or fuelwood. A cord is designated as a stack of wood measuring 128 cubic feet. A stack of wood with the pieces each 4-feet long and piled one on the other in a tier 8 feet long and 4 feet high, contains one cord. In some localities this is known as a standard cord in order to differentiate between it and the so-called long cord. When you sell your wood, sell it on the basis of the standard cord, or 128 cubic feet.

A stack of 4½-foot wood 8 feet long and 4 feet high contains 144 cubic feet or 1¼ standard cords.



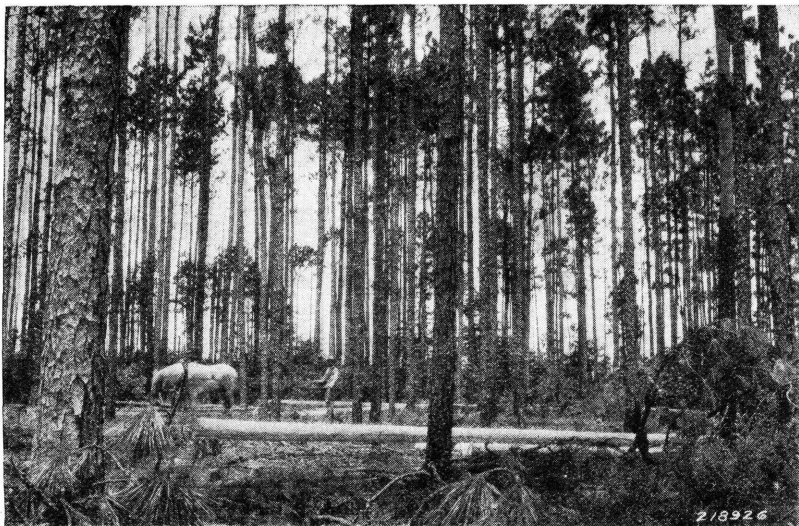


FIGURE 7.—Pines that grew in a 2-acre abandoned potato patch in southern Mississippi.

#### PINE POLES FROM AN OLD POTATO PATCH

A young man from Nebraska moved onto a small, poor, sandy-land farm in southern Mississippi. Two acres of abandoned land, worn out in growing potatoes and watermelons, came up in longleaf pine saplings (fig. 7). This "brush", as the neighbors called such patches, meant more to this young farmer from the treeless plains than to the local residents, and he protected the young trees from fire. Later, when the neighbors, in a friendly spirit, advised him to cut and burn his saplings in order to avoid the State tax on growing timber, he refused to take their advice.

The young trees grew rapidly under protection, and the land became covered with a crowded stand of tall, straight poles. One day a timber buyer came along the sandy road. He looked over the stand, which he found contained more than 1,000 merchantable poles, and offered the owner \$600 for the standing trees. This was more cash money than the farmer had seen at one time in many years, and he gladly closed the deal at the buyer's figure, although at current stumpage prices the timber was worth considerably more money.

With no expense for labor or fertilizer, the farmer's timber crop yielded him a good net profit, averaging \$5 an acre yearly for a period of 35 years.

A good plan to follow when thinning your farm woodlands is to select about 200 trees per acre of the thriftiest, best crowned individual trees and reserve these for your future timber crop. Cut any trees which interfere or compete with these crop trees. Thin the stand and weed it as you would a cotton or garden patch. Hold your best timber for sale as poles, piling, or sawlogs. Thinnings may be sold as fuelwood or pulpwood. Often you can get from two to four times more money for saw timber than for pulpwood or fuelwood, depending on your locality, and the size and quality of the trees.



## TREES RECLAIM ERODED ACRES

The soil-holding power of trees on slopes is well known. Maintaining a forest cover on a slope is a sure and cheap method of protecting soil from erosion.



FIGURE 8.—To check erosion in this field, the farmer placed check dams in the gullies and planted black locust on the gully slopes and red pines over the rest of the surface.



FIGURE 9.—A view of the same place a year later. The locusts have grown vigorously and are hiding from view the pines, which, starting off less rapidly than the locusts, are becoming well established. This field has been saved from complete devastation.

## WOOD INSURES WINTER JOB

A farmer, settling on a quarter section of cut-over timberland in northern Wisconsin, reserved 70 acres for permanent woodland and cleared the rest (fig. 10). The natural timber was pine, spruce, and fir. After a few years he began cutting timber carefully, always



leaving the thriftiest and the best to grow. This was winter work for him and his sons.

During a period of 31 years he kept a record of the amount of timber cut and the money received for it. The timber cut amounted to 700,000 board feet of sawlogs, which brought him in an average gross return of \$500 in cash yearly. Yet by his good management and cutting, the land at the end of the period (1932) had about 275,000 feet of standing timber.

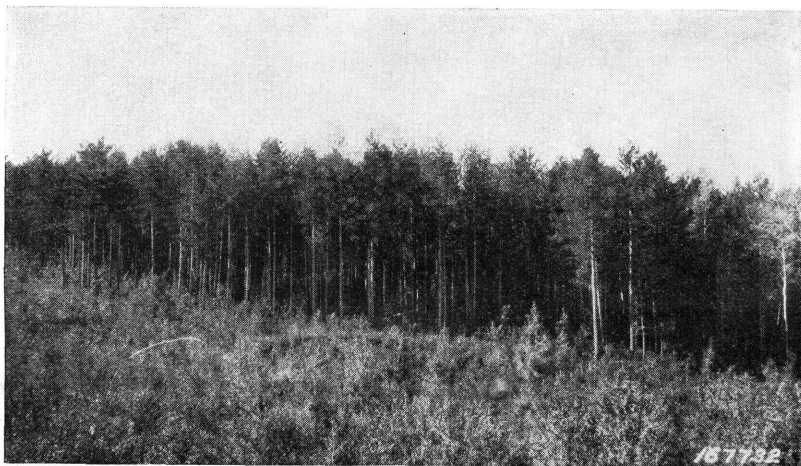


FIGURE 10.—Timberland in northern Wisconsin that provided profitable winter work for the farm owner.

The owner, in speaking of his forestry operations, admits that his woods have often been a source of temptation to him. "Many times in those earlier years", he said, "when cash was needed badly I was tempted to sell all the timber in one lump. But I did not do it. I knew that if I held onto my timber there would always be a winter job and some cash coming in. I am glad today that I never let it go."

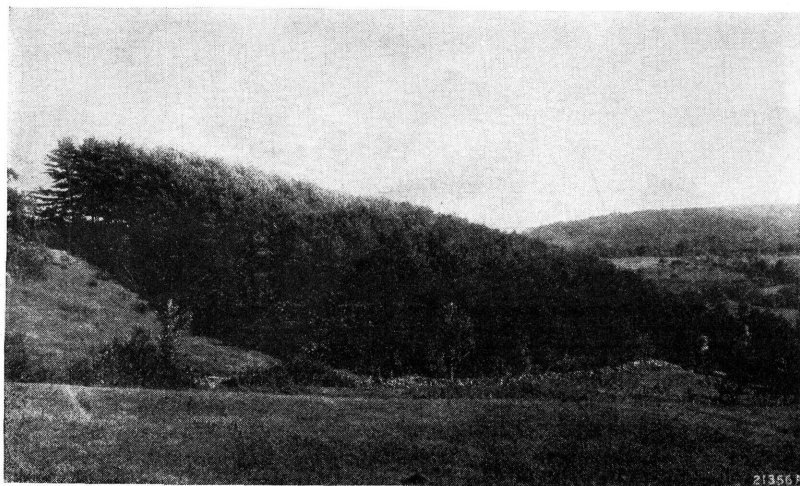


FIGURE 11.—A 3-acre white pine woodland in New Hampshire 44 years after planting.

## RETURNS IN GROWING TIMBER IN NEW HAMPSHIRE

The white pine shown in figure 11 was planted on an abandoned sidehill pasture of about 3 acres in New Hampshire. At the age of 44 years the stand contained about 90,000 board feet of lumber. The total outlay at the time, counting the value of the land and labor of planting, was \$35. The timber was worth on the stump something over \$1,500.

The farmer had this strip of practically worthless sidehill, and with some spare time on hand dug up 1,400 seedling pines growing in a thicket and set them out. About 20 years later the farmer died, and among his assets was this small tract of young pine for which, much to her surprise, the widow was offered \$300. The second owner retained it for about 15 years and then, wishing some money, sold it. Soon afterwards it came into the hands of the third owners, a lumber company, for something over \$1,000.

Assuming a land value of \$5 per acre, and a charge for taxes and oversight for the period averaging \$2 per acre per year, the operation yielded a return of 5 percent on the total investment in land, labor, and annual outlay, and in addition a neat sum equivalent to a yearly net profit from the start of \$2.34 per acre. To get this return required favorable markets.



FIGURE 12.—For 9 years this hillside on a Mississippi farm had been washing away. One spring the farmer planted it with slash pine seedlings, which can be seen in the foreground.

“Stumpage” is the term applied to standing timber. In selling your stumpage it is important that you know the methods of estimating and measuring farm timber. Farmers’ Bulletin No. 1210, “Measuring and Marketing Farm Timber” gives information on this subject.





FIGURE 13.—A view of the field shown in figure 12 after 5 years. The pines are 15 to 20 feet in height. They have been pruned and protected from fire and are rapidly increasing in size and value. (See figure 14 below for the same field 5 years later.)



FIGURE 14.—A view of the field shown in figure 13 taken 5 years later. The trees at an age of 11 years (since planting) are 30 to 35 feet in height and 6 to 9 inches in diameter. The farmer has cut a cord of fuel wood an acre and an equal amount of pulpwood, which he sold to a pulp mill. The hillside is fully protected and the farmer has a permanent timber investment.

YOUR FARM-TIMBER IS YOUR "WOODS BANK"  
 —PROTECT IT CAREFULLY—  
 —MANAGE IT WISELY—  
 —CUT IT CONSERVATIVELY—





FIGURE 15.—Forest trees are rated as a soil-building crop. They add plant food and improve the mechanical condition of soils. While trees grow best on good soils, they can be planted to utilize profitably eroded, rocky, steep, and lean soils. These planted black locust trees have healed a farmer's badly gullying field.



FIGURE 16.—Home-grown fuel wood and fence posts save money for the farmer. Each year fuel wood valued at \$150,000,000 is harvested on farm woodlands in the United States. Some of it is sold, thereby increasing the farm income.

It takes five times as many 5-inch sticks to make a cord as it does of 12-inch sticks. Don't cut your small trees.



## PRODUCTS FROM FARM WOODS



FIGURE 17.—The sale of pulpwood is an important item of farm income. If cut as a thinning in accordance with forestry practice, removal of the wood may actually improve the growth of the remaining trees and increase the value of the stand.

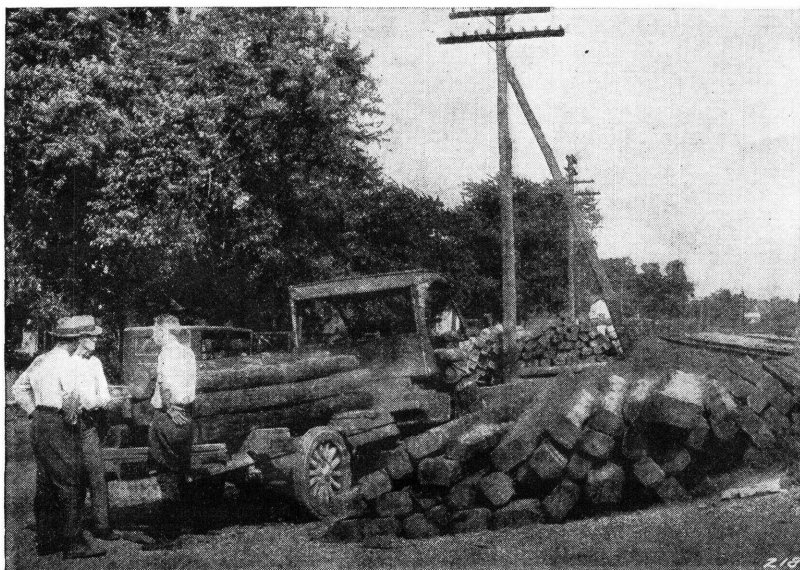


FIGURE 18.—In some years more than 15,000,000 cross ties are cut from the farm woodlands of the United States. Ties provide welcome revenue for many farms. They may be harvested profitably during the winter or in other slack seasons.

Time studies show that it takes nearly twice as long to cut a cord of wood from 6-inch trees as it does from 12-inch trees.

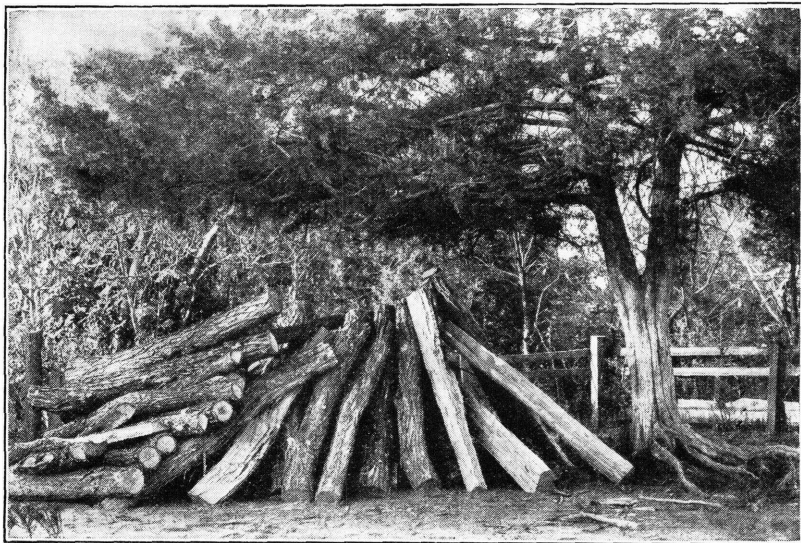


FIGURE 19.—To obtain a supply of durable fence posts is becoming more and more of a farm problem. Only a few kinds of wood are durable in the ground. Black locust (shown above) leads all others in combined durability and quickness of growth. Red cedar (tree above) is a high-grade wood for the purpose. "Grow your own posts", said a farmer, "and keep the cash at home."

## FORESTRY INCREASES FARM INCOME

BY

1. Making waste lands yield a profit by growing timber on
 

Poor soils	Wet lands
Steep slopes	Unused corners
Rocky lands	Eroded lands
2. Furnishing paying employment for men and teams during the winter.
3. Utilizing timber better on the farm and avoiding waste by
 

Cutting low stumps and small tops,
Using substitute woods in construction,
Treating nonlasting woods.
4. Increasing crop yields by planting forest-tree windbreaks.
5. Growing more and better timber on the farm through
 

Protecting the woods from fire and overgrazing,
Selecting for cutting the mature, defective, overcrowded, and
inferior kinds of trees, and leaving the straight, thrifty,
and better kinds,
Planting to fill openings in woods.
6. Marketing the higher grades of wood products direct to consumers at fair prices as
 

Saw logs	Posts
Poles	Pulpwood
Piling	Firewood
Cooperage bolts	Spoke blocks
Handle bolts	Tannin bark.

MAKE YOUR WOODLAND PERMANENTLY PROFITABLE

## WINDBREAKS AND SHELTERBELTS

They—

Protect growing crops, as well as livestock and man, from cold and parching winds.

Keep soil from drying out rapidly.

Furnish wood products for farm use and for sale.

Beautify the homestead and make it more livable.

Check erosion by wind.

Provide shelter for birds and animals.

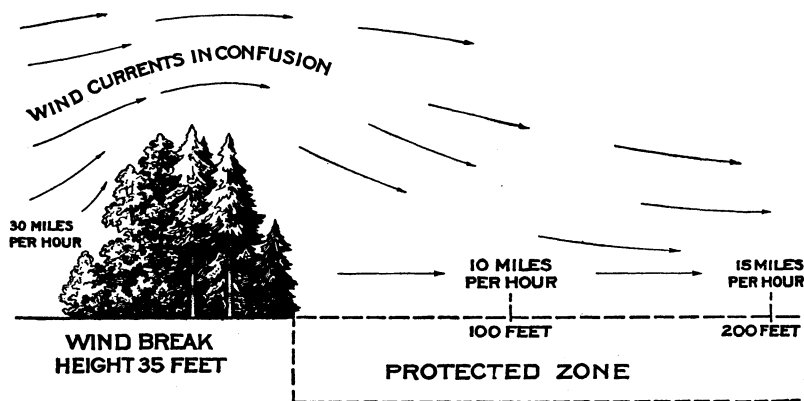


FIGURE 20.—The effect of windbreaks on wind velocity.

The primary purpose of a windbreak or shelterbelt is to reduce the destructive effects of wind, preventing soil blowing and conserving moisture. When properly located and oriented the windbreak provides sufficient baffling or resistance to cause the wind to lose much of its velocity. A few acres, or a part of an acre, devoted to trees may, in the long run, be worth a considerable amount for this protective purpose alone.

Shelterbelts and windbreaks, as well as other types of farm tree planting, have many other important benefits, such as the protection of livestock in winter, resulting in a saving in feed and a reduction in losses from exposure, furnishing fuel and other timber products for farm use, and providing a suitable habitat for birds and other forms of wildlife.

Each farm presents an individual problem in the planting of windbreaks or shelterbelts. The soil characteristics, topography, the kinds of crops which are to be raised, and other local factors, enter into the question of the kind and size of windbreak which will offer the most adequate protection.

Ordinarily, all windbreaks and shelterbelts should be flanked at least on the windward side with shrubs or low branching trees, since the larger trees tend to prune themselves as they grow older, leaving only the trunks to break the force of the wind.



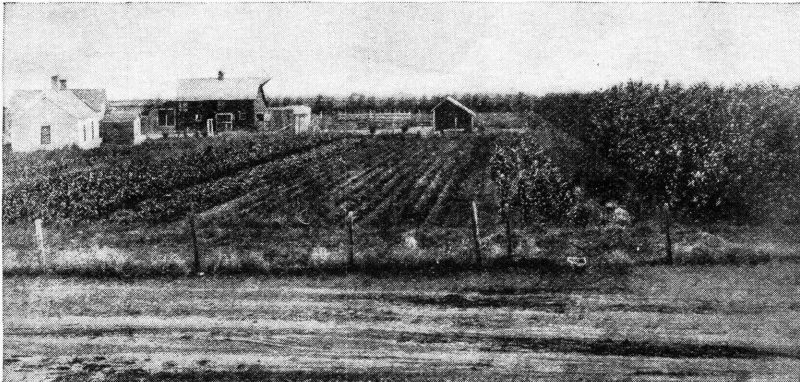


FIGURE 21.—A 3-year-old windbreak on a farm in eastern Montana. Garden crops are growing in its shelter. This windbreak is a valuable investment for the farmer. It protects the home and beautifies the property.

### FARM PRODUCTS IN TERMS OF MONEY

Timber products from farm woodlands ranked ninth in gross income value among the agricultural crops of the United States in 1934, according to estimates by the Federal Bureau of Agricultural Economics. This estimate included the value of wood products used in the maintenance and operation of the farms.

Expressed in cash income, forest products, cut and sold on farms in 1934, ranked first in New Hampshire and Vermont; second in Maine; third in West Virginia; fourth in Georgia, Wisconsin, and Missouri; and fifth in New York, Rhode Island, North Carolina, Kentucky, Tennessee, Alabama, Mississippi, and Arkansas.

TABLE 1.—*Cash and gross incomes from various crops, 1934*

Crop <sup>1</sup>	Cash income from sale of products	Gross income or total value of crop
Cotton (lint and seed).....	\$722,842,000	\$722,842,000
Fruits and nuts.....	436,191,000	464,301,000
Wheat.....	289,169,000	303,284,000
Truck crops.....	249,045,000	259,045,000
Tobacco.....	240,937,000	240,939,000
Potatoes (including sweet potatoes).....	150,350,000	209,233,000
Farm gardens.....		195,402,000
Corn.....	110,888,000	137,279,000
Hay.....	85,898,000	
Forest products.....	62,782,000	116,738,000

<sup>1</sup> All other crops less than the above amounts.

From the figures in table 1 it is evident that for every 85 cents' worth of farm-woods products used on the farm where they were grown, \$1 worth was sold and returned to the farm as cash income.

Further information on farm forestry and farm woodlands may be secured without cost from your State forester, State extension forester, or the Forest Service, United States Department of Agriculture, Washington, D. C.



# **ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE WHEN THIS PUBLICATION WAS LAST PRINTED**

---

<i>Secretary of Agriculture</i> .....	HENRY A. WALLACE.
<i>Under Secretary</i> .....	M. L. WILSON.
<i>Assistant Secretary</i> .....	HARRY L. BROWN.
<i>Director of Extension Work</i> .....	C. W. WARBURTON.
<i>Director of Finance</i> .....	W. A. JUMP.
<i>Director of Information</i> .....	M. S. EISENHOWER.
<i>Director of Personnel</i> .....	W. W. STOCKBERGER.
<i>Director of Research</i> .....	JAMES T. JARDINE.
<i>Solicitor</i> .....	MASTIN G. WHITE.
<i>Agricultural Adjustment Administration</i> .....	H. R. TOLLEY, <i>Administrator</i> .
<i>Bureau of Agricultural Economics</i> .....	A. G. BLACK, <i>Chief</i> .
<i>Bureau of Agricultural Engineering</i> .....	S. H. McCORRY, <i>Chief</i> .
<i>Bureau of Animal Industry</i> .....	JOHN R. MOHLER, <i>Chief</i> .
<i>Bureau of Biological Survey</i> .....	IRA N. GABRIELSON, <i>Chief</i> .
<i>Bureau of Chemistry and Soils</i> .....	HENRY G. KNIGHT, <i>Chief</i> .
<i>Commodity Exchange Administration</i> .....	J. W. T. DUVEL, <i>Chief</i> .
<i>Bureau of Dairy Industry</i> .....	O. E. REED, <i>Chief</i> .
<i>Bureau of Entomology and Plant Quarantine</i> .....	LEE A. STRONG, <i>Chief</i> .
<i>Office of Experiment Stations</i> .....	JAMES T. JARDINE, <i>Chief</i> .
<i>Farm Security Administration</i> .....	W. W. ALEXANDER, <i>Administrator</i> .
<i>Food and Drug Administration</i> .....	WALTER G. CAMPBELL, <i>Chief</i> .
<i>Forest Service</i> .....	FERDINAND A. SILCOX, <i>Chief</i> .
<i>Bureau of Home Economics</i> .....	LOUISE STANLEY, <i>Chief</i> .
<i>Library</i> .....	CLARIBEL R. BARNETT, <i>Librarian</i> .
<i>Bureau of Plant Industry</i> .....	E. C. AUCHTER, <i>Chief</i> .
<i>Bureau of Public Roads</i> .....	THOMAS H. MACDONALD, <i>Chief</i> .
<i>Soil Conservation Service</i> .....	H. H. BENNETT, <i>Chief</i> .
<i>Weather Bureau</i> .....	WILLIS R. GREGG, <i>Chief</i> .